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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,047	12/31/2003	Randy Dale Curry	42173-017	2279
29493	7590	08/11/2005	EXAMINER	
HUSCH & EPPENBERGER, LLC			CHIN, BRAD Y	
190 CARONDELET PLAZA			ART UNIT	PAPER NUMBER
SUITE 600			1744	
ST. LOUIS, MO 63105-3441				

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/750,047	CURRY ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Brad Y. Chin	1744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 29 April 2005.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 50-58 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 50-58 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
   · Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
   · Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
   1. Certified copies of the priority documents have been received.  
   2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
   3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 50-51, 54-55, and 57-58 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 59-60 and 62-68 of copending Application No. 10/750,048 in view of Peltier [U.S. Patent No. 5,382,410]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the claimed subject matter of copending Application No. 10/750,048 with Peltier to teach the method steps for the method of decontaminating a contaminated surface, the method comprising spraying a conducting backing for the surface, e.g. the electrically charging of the photosensitizer, as taught by Peltier, allowing the electrically charged photosensitizer to attract to the surface for decontamination.

This is a provisional obviousness-type double patenting rejection.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 50-53 and 57-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over the non-patent literature, Bayliss et. al., "The Combined Effect of Hydrogen Peroxide and Ultraviolet Irradiation on Bacterial Spores", Journal of Applied Bacteriology 47:263-269 (1979) in view of Blidschun et. al. [U.S. Patent No. 4,680,163] and Peltier [U.S. Patent No. 5,382,410].

Regarding claim 50, Bayliss et. al. teach a method of decontaminating a contaminated surface, the method comprising: applying a photosensitizer [a commonly known photosensitizer] onto the contaminated surface and illuminating the sprayed surface with light to cause chemical reactions to decontaminate the surface (See page 263 – ultraviolet [light] irradiation of spores of *Bacillus subtilis* in the presence of hydrogen peroxide produces a rapid kill which is up to 2000-fold greater than that produced by irradiation alone). Bayliss et. al. fail to teach that the photosensitizer is electrically charged and fail to teach that the method of decontaminating a contaminated surface comprises spraying the photosensitizer onto the contaminated surface of a person-occupiable space, in an environment open to the person-occupiable space.

Blidschun et. al. teach the use of a sterilizing agent, hydrogen peroxide, which is ultrasonically atomized to form a mist, e.g. for spraying, charged and subsequently directed to, e.g. spraying, the [contaminated] surface to be sterilized by an electrostatic field. The

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electrostatic field causes the exceedingly small charged droplets, which form the mist of the sterilizing agent to be conveyed to the surface (See col. 2, line 58 to col. 3, line 13). Peltier teaches the controlled generation of electrically charged vapors and/or aerosols from liquids, which are then released directly into the air of a room, or onto the inner surfaces of ventilation system duct work of a building or onto the surfaces of a ventilation system mechanical equipment and/or to distribute the vapor/aerosols throughout a building through the ventilation system, e.g. onto contaminated surfaces of a person occupiable space – chairs, floors, rooms, etc., in an environment open to the person-occupiable space – within a building (See col. 2, lines 47-53). Peltier further teaches that the method adds disinfection agents, fungicides, bactericides, viruscides, and related formulates (See col. 2, line 65 to col. 3, line 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Blidschun et. al. and Peltier with Bayliss et. al. because Bayliss et. al. teach the effectiveness of illuminating a photosensitizer, such as hydrogen peroxide, with ultraviolet light for killing bacteria spores on contaminated surfaces.

Incorporating the method of spraying an electrically charged photosensitizer from Blidschun et. al. and Bayliss et. al. onto a surface of a person-occupiable space, in an environment open to the person occupiable-space, e.g. into a room, enclosed space of any kind, or a building through the building air conditioning system, as taught by the method of Peltier, would allow for the adherence of the photosensitizer onto contaminated surfaces of person-occupiable spaces, e.g. chairs, tables, in rooms, etc., in an environment open to the person-occupiable space, in order to kill bacteria spores that may have contaminated these surfaces.

Regarding claim 51, Bayliss et. al. teach the method of decontaminating a contaminated surface where the photosensitizer is a solution (See page 264 – 0.1M sodium phosphate buffer pH 7.0 and up to 2.5 g hydrogen peroxide/100 m), and the step of spraying the photosensitizer

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onto the contaminated surface comprises electrically charging at least one component of the solution (applying Blidschun's teaching and electrically charging the hydrogen peroxide component of the solution – See explanation above).

Regarding claim 52, Bayliss et. al. further teach the method of decontaminating a contaminated surface further comprising controlling the temperature of the sprayed photosensitizer to enhance the formation rate, mobility, or the decontaminating activity of the photo-products and their ensuing reactions (See page 264 – sample temperatures were controlled by heating to 85°C and cooling in ice for at least 5 minutes).

Regarding claim 53, Bayliss et. al. further teach the method of decontaminating a contaminated surface where the photosensitizer includes hydrogen peroxide (See page 263 – ultraviolet [light] irradiation of spores of *Bacillus subtilis* in the presence of hydrogen peroxide – a common photosensitizer; See Applicant's Specification, page 7, lines 5-9 – produced a rapid kill which was up to 2000-fold greater than that produced by irradiation alone).

Regarding claim 57, Bayliss et. al. further teach the method of decontaminating a contaminated surface where the light includes light of wavelengths between about 200 nm and about 320 nm (See page 263 – ultraviolet irradiation of the spores at wavelengths 254 nm).

Regarding claim 58, Blidschun et. al. teach the method of decontaminating a contaminated surface where the photosensitizer includes carrier particles (See col. 4, lines 29-31 – the mist formed by the ultrasonic agitation of the liquid sterilizing agent is entrained in a stream of air or other suitable carrier gas, i.e. carrier particle for aiding in the application of and dispersion [spraying] of the electrically charged photosensitizer onto the contaminated surface). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Blidschun et. al. into the method of Bayliss et. al. and Peltier because carrier particles, or the suitable carrier gas such as air, would aid in the application of

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and dispersion [spraying] of the electrically charged photosensitizer through the air ventilation system of Peltier for contacting the contaminated surfaces of person occupiable spaces.

3. . . Claims 54 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over the non-patent literature, Bayliss et. al. in view of Blidschun et. al. and Peltier, as applied above in paragraph 2, and further in view of Horowitz et. al. [U.S. Patent No. 5,232,844].

Bayliss et. al. in view of Blidschun et. al. and Peltier teach the method of decontaminating a contaminated surface as described above in paragraph 2, but fail to teach the step of illuminating the sprayed surface with a continuous beam.

Regarding claim 54, Horowitz et. al. teach the illumination of a photosensitizer, such as phtalocyanine or psoralen with a continuous beam of ultraviolet light for a specific time, depending on the time of photosensitizer used for substantially inactivating a virus and resulting in a retention of intact cell functionality and structure of greater than 80% (See col. 5, lines 6-17; (See col. 8, lines 47-54). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Horowitz et. al. with Bayliss et. al. in view of Blidschun et. al. and Peltier for applying a continuous beam of ultraviolet light for illuminating a photosensitizer, such as hydrogen peroxide, because such application of continuous ultraviolet light causes the irradiation of spores of *Bacillus subtilis*, as taught by the non-patent literature Bayliss et. al.

Regarding claim 55, Bayliss et. al. further teach the method of decontaminating a contaminated surface where the light includes light of wavelengths between about 200 nm and about 320 nm (See page 263 – ultraviolet irradiation of the spores at wavelengths 254 nm).

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4. Claim 56 is rejected under 35 U.S.C. 103(a) as being unpatentable over the non-patent literature, Bayliss et. al. in view of Blidschun et. al. and Peltier, as applied above in paragraph 2, and further in view of Bowing et. al. [U.S. Patent No. 4,051,058].

Bayliss et. al. in view of Blidschun et. al. and Peltier teach the method of decontaminating a contaminated surface as described above in paragraph 2, but fail to teach the photosensitizer including a surfactant. Bowing et. al. teach a stable peroxy-containing concentrate [also known as suitable photosensitizers] for the production of microbicidal agents characterized by a content of 0.5% to 20% by weight of a peracid [known photosensitizer], 25% to 40% by weight of hydrogen peroxide [known photosensitizer] – which have long term effects on disinfecting most microorganisms (See col. 3, lines 30-35), and other constituents (See col. 1, lines 50-58). Bowing further teaches that the stable peroxy-containing concentrate contains alkylbenzene sulfonates or alkyl sulfates (See col. 3, lines 46-53), e.g. surfactants. When applying photosensitizers, surfactants aid in the dispersion and coating of the photosensitizers to surfaces. Because the intention of Bayliss et. al. in view of Blidschun et. al. and Peltier provide for the adhesion of a photosensitizer, one that is electrically charged in the case of Blidschun et. al., it would have been obvious for one of ordinary skill in the art to aid the dispersion and coating of a photosensitizer onto a contaminated surface by including a surfactant, as taught by Bowing et. al., into the photosensitizer to aid in the dispersion and coating of the photosensitizer.

#### ***Response to Arguments***

5. Applicant's arguments, see pages 2-3, filed 29 April 2005, with respect to the rejection(s) of claim(s) 50 under 35 U.S.C. 103 as being unpatentable over the non-patent literature Bayliss et. al., "The Combined Effect of Hydrogen Peroxide and Ultraviolet Irradiation

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on Bacterial Spores", Journal of Applied Bacteriology 47:263-269 (1979) in view of Blidschun et. al. [U.S. Patent No. 4,680,163] have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Peltier [U.S. Patent No. 5,382,410], as described above in paragraph 2.

Applicants' arguments, see pages 3-4, filed 29 April 2005, with respect to the rejection(s) of claim(s) 54 under 35 U.S.C. 103 as being unpatentable over the non-patent literature Bayliss et. al., "The Combined Effect of Hydrogen Peroxide and Ultraviolet Irradiation on Bacterial Spores", Journal of Applied Bacteriology 47:263-269 (1979) in view of Blidschun et. al., and further in view of Clark [U.S. Patent No. 5,925,885] have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Horowitz et. al. [U.S. Patent No. 5,232,844], as described above in paragraph 3.

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brad Y. Chin whose telephone number is 571-272-2071. The examiner can normally be reached on Monday – Friday, 8:00 A.M. – 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sun (John) Kim, can be reached at 571-272-1142. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

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applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

byc  
August 1, 2005

  
JOHN KIM  
SUPERVISORY PATENT EXAMINER